Pediatric Care Practice

Head Lice

1. Head lice infection is most commonly found in children, especially around the age of 4-11 years old with girls showing higher incidence than boys (this may be because girls often huddle together when playing). While the older children and adults are less prone to infestation.
2. Infection is spread by direct head-to-head contact, and possibly by transfer through contact with infected hairbrushes, hats, pillows, etc., although lice cannot survive for long away from the scalp (fleeting contact will be insufficient for lice to be transferred between heads) because head lice cannot fly, jump or swim. Moreover, they cannot survive away from the host for more than 12 hours and are unlikely to be passed from person to person through shared combs, brushes, towels, clothing or bedding.
3. The main risk factors for infestation with head lice (pediculosis) are being of primary school age or having a young child in the family. **Having unwashed hair or long hair is not a risk factor.**

Patient assessment

Have live lice been seen?

1. The presence of live lice is diagnostic. Treatment should be reserved for infected heads. Many parents are worry that their children may catch lice and wish the pharmacist to give their **prophylactic** treatment. Insecticides should never be used prophylactically, since this may **accelerate resistance**. However a **lice repellent** is now available.

2. Pharmacists can advise patients on how best to check the infection. Wet combing of the hair is a more reliable detection method than scalp inspection. Parents can easily check for infection by combing the child's hair over a piece of white paper, using a fine-toothed comb. The hair should be damp or wet to make the combing process easier and less painful. If live lice are present, some will be combed out of the hair and onto the paper.

3. The hair at the **nape of the neck and behind the ear** should be thoroughly checked. These spots are preferred by the lice because they are warm and relatively sheltered.

Presence of empty egg shells (nits):

The presence of nits is not necessary evidence of current infection (**common misconception**) unless live lice are also present. Nits are not removed by insecticides. (Because they are firmly glued to the hair). So **the presence of nits does not mean treatment failure**.
A fine toothed comb can be used to remove the nits after treatment.

Presence of itching:

Contrary to the popular belief, **itching is not experienced by everyone with head lice** (i.e. absence of itching does not mean that infection does not occur). Itching is an allergic response to saliva of the lice which injected into the scalp during feeding; therefore, sensitization does not occurs immediately but may take weeks to develop (thousands of bites from the lice are required). But in case of re-infection, itching may be quickly begins.

Previous infection

The pharmacist should establish whether the child has been infected before. In particular, it is important to know whether there has been a recent infection, as reinfection may have occurred from other family members if the whole family was not treated at the same time. Head-to head contact, between family members and also among young children while playing, is responsible for the transmission of head lice from one host to the next. The pharmacist could ask whether the parent was aware of any contact with infected children, e.g. if there is currently a problem with head lice at the child's school.

Medication

While it is possible that treatment failure may occur, this is unlikely if a recommended insecticide has been used correctly. Careful questioning will be needed to determine identity of any treatment used and its method of use and whether treatment failure has occurred.

Management:

Preventative Measures:
1-Avoid direct contact with infected patients.
2-Do not share articles such as combs, brushes, hats and towels
3-Use hot water to wash hairbrushes and combs of patient for 10 minutes.
4-Use hot water to wash clothes, bedding, and towels of patient.
Note: Shaving the head is not an effective treatment because lice can cling to as little as 1 mm of hair.

Treatment:

There are three treatment options:
A-Insecticides: permethrin, lindane (gama benzene hexachloride), and malathion, cure rates of 70-80 %.
B-Dimeticone and **isopropyl myristate (physical insecticides act by suffocation),** cure rates 70 %.
C-Wet-combing, cure rates 50-60 %**.**

Wet-Combing method (Bug Busting)

1-Wash the hair as normal.
2-Apply conditioner liberally. (This causes the lice to lose their grip on the hair.)
3-Comb the hair through with a normal comb first.
4-With a fine-toothed nit comb, comb from the roots along the complete length of the hair and after each stroke check the comb for lice and wipe it clean. Work over the whole head for at least 30 min.
5-Rinse the hair as normal.
6-Repeat every 3 days for at least 2 weeks.

Usage guideline of drugs for head lice:

Drug	Method of use
Permethrin 1% cream rinse	The 1% cream rinse is applied in sufficient quantities to cover or saturate washed hair and scalp. It is left on the hair for 10 minutes before rinsing; The hair is then combed with a lice comb.
Malathion (0.5% liquid)	Rub preparation into dry hair and scalp, allow to dry naturally, remove by washing after 12 hours (or overnight)
Isopropyl myristate lotion and spry (recommended for adults and children over the age of 2 years)	The lotion and spry are applied to dry hair ensuring that they are evenly distributed over dry hair. Rinsed after 10 minutes.
Lindane 1% Shampoo	Rub into the affected area, leave in place for 4 minutes then wash
Dimeticone 4% Lotion & Spray	The lotion is applied to dry hair ensuring that it is spread evenly from the hair root to the tips. The spray should be applied approximately 10 cm from the hair making sure it is evenly distributed over dry hair. Both need to be left on for a minimum of 8 hours (overnight is preferable) before being washed out with shampoo.

Note: ***After washing the product, the hair should be combed with a fine-toothed comb while it is still wet, to remove dead and dying lice from the scalp and empty egg cases attached to the hair shafts.***

Practical points

1- It is generally recommended to treat all family members at the same time to prevent reinfection from other family member. Another approach is to treat only those with confirmed infection and

to check the hair of other family member on regular basis (but it required a high level of motivation).

2- Some eggs may survive after the first application; therefore a second application 7 days later is now recommended to kill any lice that emerged from eggs. (The incubation period for head lice is 7-10 days).

3- Parents are often are embarrassed that their child has head lice, but pharmacist should reassure them that this is not a sign of poor hygiene (Head lice are not only associated with dirty hair).

4- Children should not be kept off school.

5- Alcoholic and Aqueous lotions: If available, aqueous lotion is preferred for small children and for asthmatics. Alcoholic lotions can cause some problems: A-Alcohol can cause stinging when applied to broken skin (e.g. eczema). B-Evaporation of alcohol may irritate the lung and can precipitate an asthmatic's attack (the risk is rare but the caution is still advised). In addition when an alcoholic lotion is used the hair should be kept away from naked flame.

6- Application of solution: The most effective method of application is to sequentially part sections of the hair and then apply a few drops of the treatment, spreading it along the parting into the surrounding scalp and along the hair. Approximately 50–55 mL of lotion should be sufficient for one application, although people with very thick or long hair may need more.

7- Wet-Combing method: Wet combing, or bug busting, can break the life cycle of head lice (physically remove the lice and nymphs). Effectiveness of this method is very dependent on repeated use (every 4 days) over a period of 2 weeks.

8- All products, except isopropyl myristate, can be used on children older than 6 months.

9- Pregnant women: Pregnant women with head lice should be advised to use dimeticone or to wet comb.

<u>Note</u>: Itching can persist after infestation has been cleared. For troublesome itching a sedating antihistamine may be recommended.

Nappy rash (napkin dermatitis)

Napkin rash (also called diaper dermatitis, nappy rash) refer to the erythematous rash that appear on the buttock area during infancy.
Contributing factors includes:
1-Contact of urine and faeces with the skin.
2-Wetness of the skin due to infrequent nappy changes and inadequate skin care.

Patient Assessment

Location
Napkin rash affect the diaper region (buttock, lower abdomen, and the inner thighs), therefore involvement of rash away from nappy area required referral.

Severity
1-In general, if the skin is unbroken and there are no signs of bacterial infection, treatment may be considered.
2-If signs of bacterial infection is present (weeping, yellow crusting, oozing blood or pus), then referral is required.
3-Secondary fungal infection is common [characterized by the presence of satellite papules (small red lesions near the perimeter of the affected area)], then pharmacist can recommend one of the OTC azole antifungal.

Duration
Napkin rash of longer than 2 weeks duration may be referred

Previous history: To identify the identity and effectiveness of any products used for the current or previous episodes.

Treatment timescale:
A baby with nappy rash that does not respond to skin care and OTC treatment within 1 week should be seen by the doctor.

Management:
A-Skin care
Nappies should be changed as frequently as possible.

Nappies should be left off wherever possible so that air is able to circulate around the skin and helping in drying the skin.

At each nappy changes the skin should be cleansed thoroughly with warm water and then dried carefully. The use of talc powder may be helpful, but the clumping of the powder can lead sometimes to further irritation. Talc powder should be applied to dry skin and dusted lightly over the nappy area.

Note: powder is poured into the hands then gently rubbed onto the skin but keep away from the face of the child to prevent inhalation of the powder which may lead to breathing problems.

B-Skin protectants (barrier preparation, emollient):

1- Examples: Zinc oxide, castor oil, talc powder, white petrolatum, calamine, cetrimide (celavex® cream: which has antibacterial property also),
2- They absorb moisture or prevent moisture from coming in contact with the skin (act as a barrier between the skin and outside). Also they serve as a lubricant in area of the skin in which skin-to-skin friction could aggravate diaper rash.
3- They are applied at each nappy changes after cleansing the skin.

C-Antifungal:

1- Secondary infection with candida is common in napkin dermatitis and the azole antifungals would be effective.
2- Miconazole or clotrimazole applied twice daily could be recommended by the pharmacist with advice to consult the doctor if the rash has not improved within 5 days. If an antifungal cream is advised, treatment should be continued for 4 or 5 days after the symptoms have apparently cleared.
3- An emollient cream or ointment can still be applied over the antifungal product.

Oral Thrush

Oral Thrush (Candidosis) is a fungal infection caused by Candida albicans which occurs commonly in the mouth. It is common in new born babies (because they can pick up the organism during passage through an infected birth canal.

Patient Assessment

Age

Oral thrush is most common in babies, particularly in the first few weeks of life. Often, the infection is passed on by the mother during childbirth. In older children and adults, oral thrush is rarer, but may occur after antibiotic or inhaled steroid treatment. In this older group it may also be a sign of immunosuppression and referral to the doctor is advisable.

Appearance

When candidal infection involves mucosal surfaces, white patches known as plaques are formed, which resemble milk curds; indeed, they may be confused with the latter by mothers when oral thrush occurs in babies. The distinguishing feature of plaques due to *Candida* is that they are not so easily removed from the mucosa, and when the surface of the plaque is scraped away, a sore and reddened area of mucosa will be seen underneath, which may sometimes bleed.

Previous history:

Patients who experience recurrent infections should be referred for further investigations.

Medication

Antibiotics

Some drugs predispose to the development of thrush. For example broad-spectrum antibiotic therapy can wipe out the normal bacterial flora, allowing the overgrowth of fungal infection. It would be useful to establish whether the patient has recently taken a course of antibiotics.

Immunosuppressives

Any drug that suppresses the immune system will reduce resistance to infection, and immunocompromised patients are more likely to get thrush. Cytotoxic therapy and steroids predispose to thrush. Patients using inhaled steroids for asthma are prone to oral thrush because steroid is deposited at the back of the throat during inhalation, especially if inhaler technique is poor. Rinsing the throat with water after using the inhaler may be helpful. The pharmacist should identify any treatment already tried. In a patient with recurrent thrush it would be worth enquiring about previously prescribed therapy and its success.

When to refer

Recurrent infection
All except babies
Failed medication

Treatment timescale

Oral thrush should respond to treatment quickly. If the symptoms have not cleared up within 1 week, patients should see their doctor.

Management

Antifungal agents

Miconazole

The only specially formulated product currently available for sale OTC to treat oral thrush is miconazole gel. Preparations containing **nystatin** are also effective but are restricted to prescription-only status. Miconazole gel is an orange-flavoured product, which should be applied to the plaques using a clean finger four times daily after food in adults and children over 6 years, and twice daily in younger children and infants. For young babies, the gel can be applied directly to the lesions using a cotton bud or the handle of a teaspoon. The gel should be retained in the mouth for as long as possible. Treatment should be continued for 2 clear days after the symptoms have apparently gone, to ensure that all infection is eradicated.

Threadworms (pinworms)

Infection with threadworm (Entrobius vermicularis) is common in young children. Eggs are transmitted to the human most primarily by the faecal-oral route. (e.g. eggs lodging under fingernails) which are ingested by finger sucking after anal contact. Eggs can survive for up to a week outside the human host.

Clinical features:

1-Perianal itching is the classic presentation and any child with night-time perianal itching is almost certain to have threadworm (females worms emerge from the anus at night to lay their eggs on the surrounding skin. The eggs are secreted together with a sticky irritant fluid onto the perianal skin.

2-The intense itching caused by the sticky secretion. Itching can lead to sleep disturbance resulting in irritability and tiredness the next day.

3-In girls, migration to the vagina can cause intense irritation, which may be confused with thrush.

4-Diagnosis can be confirmed by observing threadworm on the stool (white- or cream-colored thread-like objects, about 10 mm in length and less than 0.5 mm in width). The worms can survive outside the body for a short time and hence may be seen to be moving.

5-Itching without sighting the threadworm may be due to other causes such as allergic dermatitis caused for e.g. by soaps.

6-Complicating factors such as secondary bacterial infection of the perianal skin can occur due to persistent scratching. The parent should be asked if the perianal skin is broken or weeping.

Other family members

The pharmacist should enquire whether any other member of the family is experiencing the same symptoms. However, the absence of perianal itching and threadworms in the faeces does not mean that the person is not infected; it is important to remember that during the early stages, these symptoms may not occur.

Recent travel abroad

If any infection other than threadworm is suspected, patients should be referred to their doctor for further investigation. If the person has recently travelled abroad, this information should be passed on to the doctor so that other types of worm can be considered.

Medication

The pharmacist should enquire about the identity of any treatment already tried **and how the treatment was used.** Any treatment failure (correct use without benefit) required referral.

When to refer

Infection other than the threadworm suspected
Recent travel abroad
Medication failure

Management

When recommending treatment for threadworms, it is important that the pharmacist emphasise how and when the treatment is to be used. In addition, advice about preventing recurrence can be given, as described under 'Practical points' below. The BNF states that mebendazole is the treatment of choice for patients of all ages. If symptoms do not remit after correct use of an appropriate preparation, patients should see their doctor.

Anthelmintic agents:

A- Mebendazole

Mebendazole is the preferred treatment for threadworms, can be given to children aged 2 years and over and to adults. It is also active against whipworm, roundworm and hookworm. Compliance with therapy is high because of the single-dose treatment. Reinfection is common and a second dose can be given after 2–3 weeks. The drug is formulated as a suspension or a tablet. Occasionally, abdominal pain and diarrhoea may occur as side-effects. Mebendazole is not recommended for pregnant women.

B- Piperazine

Piperazine is effective against threadworm and roundworm. The mode of action of piperazine seems to be paralysis of the threadworms in the gut. Piperazine can be recommended OTC for children from 3 months onwards. It is available in granular form in sachets. The incorporation of a laxative (senna) in the sachet preparation helps to ensure that the paralysed worms are then expelled with the faeces.
Instructions: One dose is followed by another 2 weeks later to destroy any worms that might have hatched and developed after the first dose. Only two doses are required.
Side-effects of piperazine include nausea, vomiting, diarrhoea and colic but these are uncommon. Adverse effects on the central nervous system include headaches and dizziness but these are rare.

Practical points:

1- Parents are often anxious and ashamed that their child has a threadworm, thinking that lack of hygiene is responsible. The pharmacist can reassure them that it is a common condition and any child can become infected and it does not indicate a lack of attention.

2- All family members should be treated at the same time this is because they may be in the early stages of infection and thus asymptomatic.

3- Transmission and re-infection by threadworm can be prevented by the following practice measures:

A- Cutting fingernails short. Hands should be washed after going to toilet and before preparing or eating food.

B- Affected members having a bath or shower each morning during the treatment period to wash away the eggs which were laid during the previous night.

C- Change and wash your underwear each day (for 3 weeks).

D- Discourage biting nail and scratching anal area.

4- Pregnant women should be advised to practice hygiene measures for 6 weeks to break the cycle of infection.

References:

1. Symptoms in the Pharmacy 8th Edition, 2018.
2. Community Pharmacy a guide to management of minor ailments 1st Edition, 2018.